IN THE CLAIMS

The following listing of the claims is provided in accordance with 37 C.F.R. §1.121.

1. (previously presented) A communications system for a medical imaging system, comprising:

a slave node for each of a plurality of components of the medical imaging system, wherein the plurality of components of the medical imaging system comprise image acquisition components, image processing components, user interaction components, monitoring components, or a combination thereof;

a master node coupled to each slave node via a dual-conductor linkage to form a network;

a uniform communications protocol for communications between the master node and each slave node; and

at least one safety loopback communications link between the master node and at least one slave node, the safety loopback communications link being independent from the dual-conductor linkage and communicating signals separately from signals communicated via the dual conductor linkage.

2. (previously presented) The communications system of claim 1, wherein the dual-conductor linkage comprises a controller area network bus.

3. (previously presented) The communications system of claim 2, wherein the dual-conductor linkage comprises controller area network high and low communications links.

4. (canceled).

5. (original) The communications system of claim 1, wherein the uniform communications protocol comprises a controller area network open protocol.

6. - 9. (canceled).

10. (original) The communications system of claim 1, wherein the master node is disposed on control circuitry.

11. (original) The communications system of claim 1, wherein the master node comprises a fault sensing system to identify component faults at the slave nodes.

12. (original) The communications system of claim 11, wherein the fault sensing system comprises a message-response system having a critical response time.

13. (original) The communications system of claim 12, wherein the message-response system comprises a periodic monitoring message, which comprises a response request.

14. (original) The communications system of claim 11, wherein the fault sensing system comprises a safe mode backup system for the plurality of components.

15. (original) The communications system of claim 1, wherein the master node comprises a component control system having a timed-component-response system.

16. (original) The communications system of claim 1, wherein at least one of the slave nodes comprises an emergency status messaging module.

17. (original) The communications system of claim 1, wherein at least one of the slave nodes comprises an asynchronous data communications module adapted to transfer data periodically from the slave node to the master node without the master node querying for the data.

18. (original) The communications system of claim 1, wherein at least one of the slave nodes comprises a synchronous data communications module adapted to transfer data from the slave node to the master node in response to the master node querying for the data.

19. (original) The communications system of claim 1, wherein at least one of the slave nodes comprises a fault sensing system to identify component faults at the slave node.

20. (original) The communications system of claim 1, wherein the uniform communications protocol comprises a cyclic redundancy check module adapted to ensure data integrity on the network.

21. (previously presented) A medical imaging system, comprising:

a plurality of medical imaging components having network slave nodes, wherein the plurality of medical imaging components comprise image acquisition components, image processing components, user interaction components, monitoring components, or a combination thereof;

control circuitry having a network master node communicatively coupled to the network slave nodes via a dual-conductor linkage;

a uniform communications protocol for network communications between the network master node and the network slave nodes; and

at least one safety loopback communications link extending between the control circuitry and at least one of the medical imaging components, the safety loopback communications link being independent from the dual-conductor linkage and communicating signals separately from signals communicated via the dual conductor linkage.

22. (previously presented) The medical imaging system of claim 21, wherein the dual-conductor linkage comprises a controller area network bus.

23. (previously presented) The medical imaging system of claim 22, wherein the dual-conductor linkage comprises high and low communications links.

24. (canceled).

25. (original) The medical imaging system of claim 21, wherein the uniform communications protocol comprises a controller area network open protocol.

26. (original) The medical imaging system of claim 21, wherein the uniform communications protocol comprises an event-driven communications module.

27. (original) The medical imaging system of claim 26, wherein the event-driven communications module comprises a component status notification system.

28. (original) The medical imaging system of claim 21, wherein the uniform communications protocol comprises a periodic communications module.

29. (original) The medical imaging system of claim 28, wherein the periodic communications module comprises a message-response monitoring system.

30. (original) The medical imaging system of claim 21, wherein the network master node comprises a fault sensing system to identify component faults at the network slave nodes.

31. (original) The medical imaging system of claim 21, wherein the network master node comprises a component control system having a timed-component-response system.

32. (original) The medical imaging system of claim 21, wherein at least one of the network slave nodes comprises an emergency status notification module.

33. (original) The medical imaging system of claim 21, wherein at least one of the network slave nodes comprises an asynchronous data communications module adapted to transfer data periodically from the network slave node to the network master node without the network master node querying for the data.

34. (original) The medical imaging system of claim 21, wherein at least one of the network slave nodes comprises a synchronous data communications module adapted to transfer data from the network slave node to the network master node in response to the network master node querying for the data.

35. (original) The medical imaging system of claim 21, wherein the uniform communications protocol comprises a cyclic redundancy check module adapted to ensure data integrity on the network.

36. (previously presented) A method for communicating between components of a medical imaging system, comprising the acts of:

managing the medical imaging system at a master node of a network having a slave node for each of a plurality of medical imaging components, wherein the plurality of medical imaging components comprise image acquisition components, image processing components, user interaction components, monitoring components, or a combination thereof;

coupling the master node to each slave node via a dual-conductor linkage;

communicating between the master and slave nodes using a uniform communications protocol; and

communicating between the master and at least one slave node via at least one safety loopback communications link, the safety loopback communications link being independent from the dual-conductor linkage and communicating signals separately from signals communicated via the dual conductor linkage.

37. (original) The method of claim 36, wherein the act of managing the medical imaging system comprises the act of operating the medical imaging system.

38. (original) The method of claim 36, wherein the act of managing the medical imaging system comprises the act of monitoring operational characteristics of the plurality of medical imaging components.

39. (original) The method of claim 36, wherein the act of managing the medical imaging system comprises the act of efficiently controlling the plurality of medical imaging components using the uniform communications protocol.

40. (original) The method of claim 36, wherein the act of communicating comprises the act of providing communications compatibility among the plurality of medical imaging components.

41. (original) The method of claim 36, wherein the act of communicating comprises the act of transmitting messages over a controller area network bus.

42. (original) The method of claim 36, wherein the act of communicating comprises the act of networking the master and slave nodes with a controller area network open protocol.

43. (original) The method of claim 36, wherein the act of communicating comprises the act of transmitting data over at least one of high and low communications links.

44. (original) The method of claim 36, wherein the act of communicating comprises the act of transmitting an event-driven message.

45. (original) The method of claim 44, wherein the act of transmitting the event-driven message comprises the act of notifying the master node of a component status at one of the slave nodes.

46. (original) The method of claim 44, wherein the act of transmitting the event-driven message comprises the act of notifying the master node of a component fault at one of the slave nodes.

47. (original) The method of claim 36, wherein the act of communicating comprises the act of transmitting a periodic status message.

48. (original) The method of claim 47, wherein the act of transmitting the periodic status message comprises the act of sending a timed-response request to at least one of the slave nodes.

49. (original) The method of claim 48, wherein the act of transmitting the periodic status message comprises the act of changing the slave node to a safe state if the slave node does not respond to the timed-response request as requested.

50. (original) The method of claim 47, wherein the act of transmitting the periodic status message comprises the act of notifying the master node of an error if the slave node does not receive the periodic status message from the master node.

51. (original) The method of claim 36, wherein the act of managing comprises the acts of:

sending a command to one of the slave nodes; and

requesting a command verification from the slave node.

52. (original) The method of claim 51, wherein the act of requesting the command verification comprises the act of setting a maximum response time for the slave node to respond to the requested command verification.

53. (previously presented) A medical diagnostic system, comprising:

uniform communications means for communicating between components of the medical diagnostic system, wherein the components comprise image acquisition components, image processing components, user interaction components, monitoring components, or a combination thereof;

message means for safely operating the medical diagnostic system; and

safety loopback communications means for communicating between the components of the medical diagnostic system, the safety loopback communications means communicating signals separately from the uniform communications means.

54-55. (canceled).

56. (previously presented) A method for generating a medical diagnostic image, comprising the acts of:

operating the medical imaging system at a master node of a network having a slave node for each of a plurality of medical imaging components, wherein the plurality of medical imaging components comprise image acquisition components, image processing components, user interaction components, monitoring components, or a combination thereof;

coupling the master node to each slave node via a dual-conductor linkage;

communicating between the master and slave nodes using a uniform communications protocol;

communicating between the master and at least on slave node via at least one safety loopback communications link, the safety loopback communications link being independent from the dual-conductor linkage and communicating signals separately from signals communicated via the dual conductor linkage.; and

generating the medical diagnostic image.

57. (original) The method of claim 56, wherein the act of operating the medical imaging system comprises the act of monitoring operational characteristics of the plurality of medical imaging components.

58. (original) The method of claim 56, wherein the act of operating the medical imaging system comprises the act of efficiently controlling the plurality of medical imaging components using the uniform communications protocol.

59. (original) The method of claim 56, wherein the act of communicating comprises the act of providing communications compatibility among the plurality of medical imaging components.

60. (original) The method of claim 56, wherein the act of communicating comprises the act of transmitting messages over a controller area network bus.

61. (original) The method of claim 56, wherein the act of communicating comprises the act of networking the master and slave nodes with a controller area network open protocol.

62. (original) The method of claim 56, wherein the act of communicating comprises the act of transmitting data over at least one of high and low communications links.

63. (original) The method of claim 57, wherein the act of communicating comprises the act of transmitting an event-driven message.

64. (original) The method of claim 63, wherein the act of transmitting the event-driven message comprises the act of notifying the master node of a component status at one of the slave nodes.

65. (original) The method of claim 63, wherein the act of transmitting the event-driven message comprises the act of notifying the master node of a component fault at one of the slave nodes.

66. (original) The method of claim 56, wherein the act of communicating comprises the act of transmitting a periodic status message.

67. (original) The method of claim 66, wherein the act of transmitting the periodic status message comprises the act of sending a timed-response request to at least one of the slave nodes.

68. (original) The method of claim 67, wherein the act of transmitting the periodic status message comprises the act of changing the slave node to a safe state if the slave node does not respond to the timed-response request as requested.

69. (original) The method of claim 66, wherein the act of transmitting the periodic status message comprises the act of notifying the master node of an error if the slave node does not receive the periodic status message from the master node.

70. (original) The method of claim 56, wherein the act of operating comprises the acts of:

sending a command to one of the slave nodes; and

requesting a command verification from the slave node.

71. (original) The method of claim 70, wherein the act of requesting the command verification comprises the act of setting a maximum response time for the slave node to respond to the requested command verification.

72. – 84. (canceled).

85. (previously presented) The communications system of claim 1, wherein the master node comprises a uniform communications module, a routine operational guarding module, a code error guarding module, a message integrity guarding module, an emergency notification module, a control/command management module, or a combination thereof.

86. (previously presented) The communications system of claim 1, wherein at least one of the slave nodes comprises a uniform communications module, a routine operational guarding module, a code error guarding module, a message integrity guarding module, an emergency notification module, a control/command management module, an asynchronous process data module, a synchronous process data module, or a combination thereof.

87. (previously presented) The medical imaging system of claim 21, wherein the network master node comprises a uniform communications module, a routine operational guarding module, a code error guarding module, a message integrity guarding module, an emergency notification module, a control/command management module, or a combination thereof.

88. (previously presented) The medical imaging system of claim 21, wherein network slave nodes comprise a uniform communications module, a routine operational guarding module, a code error guarding module, a message integrity guarding module, an emergency notification module, a control/command management module, an asynchronous process data module, a synchronous process data module, or a combination thereof.